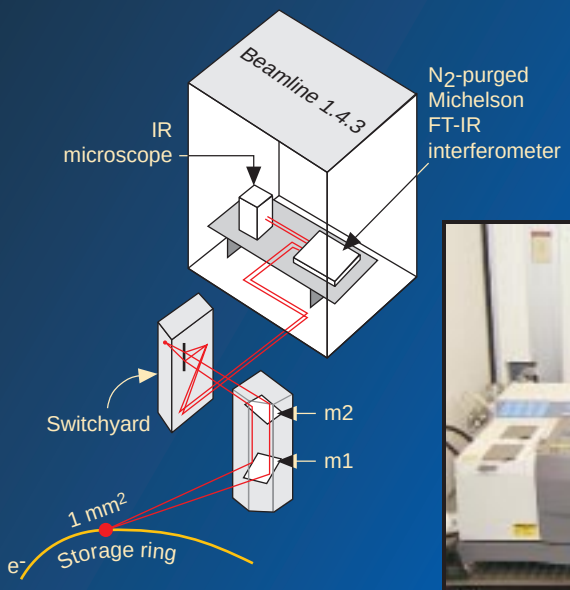
applied spectroscopy

55/2

FEBRUARY 2001

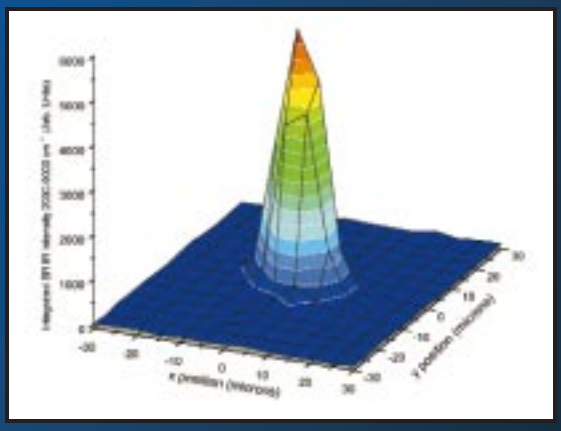
ISSN: 0003-7028

An International Journal of Spectroscopy

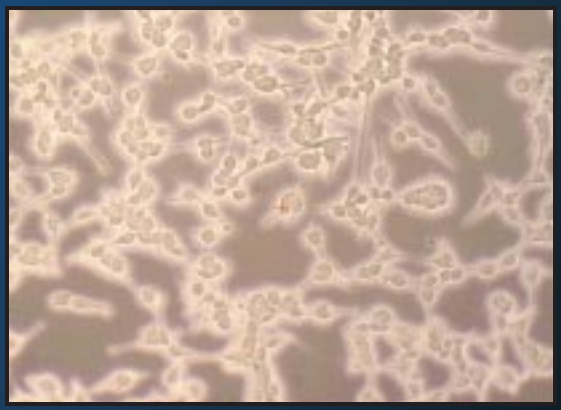


Coblentz Society Newsletter

FOCUS ON CAREERS: Choosing a Career at an Undergraduate Institution



SYNCHROTRON INFRARED SPECTROMICROSCOPY: A NONDESTRUCTIVE BIOLOGICAL TOOL



Official Publication of the Society for Applied Spectroscopy

Cover Feature

Infrared spectroscopy has a long history as an excellent tool for investigating chemical bonds and electronic properties of many materials. Over the past decade, commercial spectrometer companies have offered combinations of Fourier transform infrared spectroscopy and optical microscopy. This union, FT-IR spectromicroscopy, correlates visual microscopic inspection with the molecular chemistry analysis of IR spectroscopy. Several facilities have recently added high-brightness synchrotron light sources into the equation to greatly enhance the available IR signal at very high, diffraction-limited spatial resolutions. The cover images show one such infrared spectromicroscopy beamline at the Advanced Light Source in Berkeley, CA. The images (from top to bottom) show the ALS building, a drawing of the beamline configuration, a photograph of the SR FT-IR spectromicroscopy instrumentation, the measured diffraction-limited spot size, and finally two biology-related fields in which this beamline is being used: geomicrobiology and cellular biology. Synchrotron-based FT-IR spectromicroscopy is being applied more and more to biological systems since the spot size is on the order of the size of a single mammalian cell. The question then arises, "Does the intense synchrotron beam harm biological samples?" The article in this issue by Martin, Tsvetkova, Crowe, and McKinney, "Negligible Sample Heating from Synchrotron Infrared Beam", answers, No. SR FT-IR spectromicroscopy is truly nondestructive.